CLAIMS

Claim 1: (previously presented) A method of reinforcing at least a portion of a structure of an automobile frame during initial assembly, the method comprising:

supporting a flexible barrier member along a portion of an automobile frame structure during the initial assembly of the automobile for dividing the area of the structure into one or more sections;

filling one or more of the sections of the structure with a thermally activated expandable polymeric reinforcement material, wherein the flexible barrier member retains the reinforcement material in a desired location of reinforcement within the automobile frame; and

exposing the reinforcement material to an external heat source at a temperature ranging from approximately 93° C to approximately 204° C for thermally activating expansion of the reinforcement material, wherein the reinforcement material substantially assists in increasing the strength and stiffness of the automobile frame structure.

Claim 2: (Issued Claim) The method as defined in claim 1, wherein the flexible barrier member is a polymeric material.

Claim 3: (Issued Claim) The method as defined in claim 1, wherein the flexible barrier member is an inflatable membrane.

Claim 4: (Issued Claim) The method as defined in claim 1, wherein the flexible barrier member is fabricated of an adhesive material.

Claim 5: (Issued Claim) The method as defined in claim 3, wherein the inflatable membrane is inflated by filling the interior portion thereof with a reinforcement material.

Claim 6: (Issued Claim) The method as defined in claim 5, wherein the inflatable membrane is inflated by filling the interior portion thereof with a pumpable substance.

Claim 7: (Issued Claim) The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member is a heat activated material.

Claim 8: (Issued Claim) The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member is cured by a change in ambient conditions.

Claim 9: (Issued Claim) The method as defined in claim 5, wherein the reinforcement material filling the flexible barrier member comprises a multiplicity of pellets.

Claim 10: (Issued Claim) The method as defined in claim 3, wherein the inflatable membrane is inflated by filling the interior portion thereof with a gas or liquid substance.

Claim 11: (Issued Claim) The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a pumpable material.

Claim 12: (Issued Claim) The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a polymeric material.

Claim 13: (Issued Claim) The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a heat activated material.

Claim 14: (Issued Claim) The method as defined in claim 1, wherein the reinforcement matter is a two component substance reactive at ambient conditions.

Claim 15: (Issued Claim) The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is cured by a change in ambient conditions.

Claim 16: (Issued Claim) The method as defined in claim 1, wherein the reinforcement material filling one or more sections of the structure being reinforced is a multiplicity of pellets.

Claim 17: (Cancelled)

Claim 18: (Cancelled)

Claim 19: (Cancelled)

Claim 20: (Cancelled)

Claim 21: (Cancelled)

Claim 22: (Cancelled)

Claim 23: (Previously Presented) The method of claim 1, wherein the flexible barrier includes perforations to allow a small portion of the reinforcement material to flow onto an exterior surface of the flexible barrier.

Claim 24: (Previously Presented) The method of claim 1, wherein the flexible barrier comprises a structural adhesive.

Claim 25: (Previously Presented) The method of claim 1, wherein the flexible barrier has an integrated neck portion.

Claim 26: (Previously Presented) The method of claim 25, wherein the neck portion has an end portion for coupling the flexible barrier to a fluid pumping system for filling the interior of the flexible barrier.

Claim 27: (Previously Presented) The method of claim 1, wherein the flexible barrier has end portions joined by a center portion.

Claim 28: (Previously Presented) The method of claim 1, wherein the flexible barrier comprises two opposing movable end portions supported by a rod.

Claim 29: (Previously Presented) The method of claim 1, further comprising securing the flexible barrier member in position by securing a neck portion of the flexible barrier member to an adjacent surface defining an opening in the frame structure with an adhesive.

Claim 30: (Previously Presented) The method of claim 1, wherein the flexible barrier is coated with an adhesive material.

Claim 31: (Previously Presented) The method of claim 1, wherein the flexible barrier includes an integrally formed neck as part of an end portion of the flexible barrier.

Claim 32: (Previously Presented) The method of claim 31, wherein the neck portion extends directionally along the length of the frame.

Claim 33: (Previously Presented) The method of claim 1, wherein, during the filling step, the thermally activated expandable polymeric reinforcement material is a liquid, and upon curing becomes a thermoset material.

Claim 34: (Previously Presented) The method of claim 1, wherein, prior to curing, the thermally activated expandable polymeric reinforcement material is a pellet, and upon curing becomes a thermoset material.

Claim 35: (Previously Presented) The method of claim 1, wherein the flexible barrier member includes two single flexible sheets spaced a distance apart.

Claim 36: (Cancelled)

Claim 37: (Cancelled)

Claim 38: (Previously Presented) A method of reinforcing at least a portion of a hollow cavity, the method comprising:

inserting a flexible barrier member within a cavity of a structure for dividing the cavity into one or more sections, the flexible member including two movable end portions supported by a rod; and

filling one or more sections of the cavity with a pellet reinforcement material; and

curing the pellet reinforcement material to cause the movable end portions to slide along the rod in opposite directions, wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure.

Claim 39: (Currently Amended) A method of reinforcing at least a portion of a hollow cavity, the method comprising:

inserting a flexible barrier member into a cavity of a structure from an open end of the structure;

inflating the flexible barrier member with a fluid under pressure;

filling one or more sections of the cavity with a thermally activated expandable polymeric reinforcement material; and

activating the thermally activated expandable polymeric reinforcement material to fill the cavity, wherein the reinforcement material substantially assists in increasing the strength and stiffness of the structure wherein:

(i) the filling step includes pumping thermally activated expandable polymeric reinforcement material into a neck portion of the flexible member that extends in the longitudinal direction of the structure; and

(ii) the fluid under pressure is introduced through another neck portion of the flexible barrier.

Claim 40: (Cancelled)

Claim 41: (Cancelled)

Claim 42: (Cancelled)

Claim 43: (Cancelled)

Claim 44: (Currently Amended) The method of claim [[40]] 39, wherein the activating step includes exposing the reinforcement material to a temperature ranging from approximately 93° C to approximately 204° C for activating expansion of the reinforcement material and forming a

structural foam, and wherein upon expansion the structural foam reinforcement material substantially assists in increasing the strength and stiffness of an automobile frame structure.

Claim 45: (previously presented) The method claim 1, wherein the flexible barrier member is formed of a polymeric material.